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It is formed on the principle suggested by Gauss, of separating the needle altogether from the circle by which its position is determined; the moveable arms of the divided circle being furnished with compound microscopes, by means of which the extremities of the needle are observed. The circle is divided to 10'; and the readings are made to single minutes by the help of verniers.

By a simple modification in the construction of the instrument, it is capable of being used with needles of various lengths, not exceeding the diameter of the measuring circle; and it is hoped that it will thus serve to determine the question, not yet solved, as to the most advantageous dimensions of the dip needle.

Another, and more important, peculiarity in this instrument, is its adaptation to the determination of the intensity in absolute measure. In the received method, the *horizontal component* of the intensity is determined by a double observation, and the *total intensity* thence inferred by multiplying it by the secant of the inclination. Hence, in the high magnetic latitudes, where the inclination is considerable, any error in it will induce a large error in the inferred intensity; and in the neighbourhood of the magnetic pole the method fails altogether. The present instrument is adapted to measure the total intensity *directly*; and it is easily shewn that the result thus obtained is, in the high magnetic latitudes, much more accurate than that deduced in the ordinary way. The instrument may be employed, also, for the measurement of the horizontal and of the vertical components of the intensity.

Mr. Clibborn read a notice of certain Bronze Antiquities in the Museum of the Academy.

Mr. Clibborn stated that he had lately detected iron cores in the centre of the bronze composing the mouth-pieces of several ancient horse-bits in the Museum. The fact was interesting, as it appeared to prove that, at the time

these bits were manufactured, iron was a cheaper metal than bronze, it being used to save so much of that metal. It might, however, have been used for the purpose of chilling the bronze which composed the lateral rings, when their material in the molten state flowed through the openings in the mouth-pieces and formed these rings, which would otherwise have adhered to the mouth-pieces. In the Museum are many specimens of bronze castings, united by a process of this kind, yet there is no example of hard soldering, which appears to be a more modern invention.

The principle of covering iron with bronze, in the fluid state, is exhibited in the fabrication of the folded or lapped iron bells in the Museum, which are, in several instances, covered with bronze or brass, perfectly adhering to the iron surface. The bronze fills up the folds and joints, thus preventing any false vibration, and the bell sounds as if it were composed of one piece of metal.

He also directed the attention of the Meeting to the resemblance between the patterns on some curious antique plates in the Museum, and the details of a certain ornament very common in the initial letters in the manuscript Books of Kells, in the College Library, and the Book of Armagh, now deposited in the Museum of the Academy. He was disposed to infer, that these plates were of the same time as the MSS., or even earlier; for Mr. Westwood, who was the first to notice the resemblance, considered the pattern on them to be the type or original of the designs in the illuminations. This would support the conjecture that these plates were intended for Christian purposes, as pattens, or communion plates, probably; though the designs differ so very much from those of a later period.

The size and materials of these plates are the same as those of the *Mias Tighernain*, which may have been used as a patten also. This is rendered probable by the fact, communicated by the Rev. Dr. Kelly of Maynooth, that he had seen

pattens of the same size, also made of copper, in use in the south of France. One of the plates in the Museum forms a cover for another, and is pierced with an opening, which is over a hollowed part of the under plate. The arrangements and proportions of the parts are such as to lead us to suspect that these plates, when placed together, may have formed a sort of poor-box, the alms having been dropped through the opening into the cupped part of the lower plate. It may be also observed that, on the most perfectly finished portion of one of these plates, there is the evident wear or impression of the thumb of a person who had, for a considerable time, handled it in the way a mendicant would, who might present it for alms. The back of this plate, and one of the others, has marks of fire on it. Mr. Clibborn also stated that a visitor to the Academy lately recognized these plates, as being very similar to two others, also composed of copper, which had been recently found in Armagh, and which he hoped would be soon deposited in the Museum, as they had been freely offered to our collection. Some light may thus be thrown on the use of these curious articles, which have hitherto been called shields ; there being no evidence as to their original use, nor until lately was there any suspicion entertained of their belonging to the Christian period. From the perfection of the workmanship, and from some analogies in it and in the designs, it was also inferred that the large trumpets in the Museum might have been fabricated by artists of the same school as those who constructed the pattens.

The Secretary of Council read a translation of a letter from Professor Encke to M. Schumacher relative to Le Verrier's Planet. He also laid before the Academy the following note of observations made by E.J. Cooper, Esq., of Markree Castle, with his transit circle :